



# ASSOCIATION FOR CONSUMER RESEARCH

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## **Understanding the Expense Prediction Bias**

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The present research makes several important contributions to the literature on expense misprediction. Most notably, we show that EPB is prevalent in large samples of adult Americans, that EPB is associated with payday loan use, and that EPB can be reversed by manipulating perceived unusualness of future expenses.

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# Empty Wallets and Sparse Portfolios: Causes and Consequences of Poor Financial Decisions

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## **Paper #1: When Your Hands Are Tied: The Effect of Expense Ownership on Financial Decisions**

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## **Paper #2: Understanding the Expense Prediction Bias**

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## **Paper #3: Discretionary Debt Decisions: Consumer Willingness to Borrow for Experiences and Material Goods**

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## **Paper #4: Do People Understand the Benefit of Diversification?**

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### SESSION OVERVIEW

Making financial decisions is a fundamental aspect of being a consumer. However, the typical consumer lacks basic financial literacy (Fernandes, Lynch, and Netemeyer 2014) and borrows and spends significantly more than they should. As the private sector shifts away from pension plans (Novy-Marx and Rauh 2011), the onus on the consumer to better manage their finances is paramount. While much of past research has focused on identifying ways in which consumers engage in financial behavior and how these behaviors can be improved (Thaler & Sunstein 2009), we contribute to the dialogue by exploring the dark side of financial behaviors—the causes and consequences of poor financial decisions.

Specifically, in this session we explore false beliefs and biases that cause poor financial decision making, and examine their downstream consequences in four major domains of financial behaviors: spending, planning and forecasting, borrowing, and investing.

First, Morris and Huang examine the impact of feeling ownership over the decision to spend. They find that low perceived ownership over the incurrence of an expense can lead to less pain of payment and consequently a higher likelihood of over spending—especially among consumers who tend to be less financially responsible and thus more likely to use the lack of ownership as justification for spending. In the second paper, Howard, Hardisty, Sussman, and Knoll examine the expense prediction bias and find that over a broad American sample, consumers predict lower expenses for the future than they recall for the past. Through five studies, they find that this effect is due to perceiving past expenses as more unusual than future expenses, and that it is predictive of high interest payday loan usage. In the third paper, Tully and Sharma identify a key variable that determines a consumer's willingness to borrow—whether the target item is an experience or a material good. They argue through seven studies that despite being more ephemeral, consumers have a higher willingness to borrow for experiences because of a heightened importance of purchase timing. Finally, in the last paper, Reinholz, Fernbach, and de Langhe show that individuals—both high and low in financial literacy—do not understand diversification and falsely believe that it increases the expected return and volatility of a portfolio.

Consequently, these biases lead investors to construct risky portfolios that mismatch their risk preferences.

Together, the four papers in this session enhance our understanding of how and why poor financial decisions occur. The studies incorporate paradigms and methods that extend from histogram building tools, large-scale archival data, to multiple experiments involving actual financial decisions with real implications. Collectively, these papers draw from a wide spectrum of literature including agency, categorization, time, and risk perceptions, and provide insight into poor financial behaviors such as spending, inadequate planning and forecasting, borrowing, and improper investing. We believe that this session will attract a broad audience, and facilitate interesting discussions and collaborations that can generate valuable insights for researchers, marketers, and policy makers who aim to help consumers make better financial decisions.

## **When Your Hands Are Tied: The Effect of Expense Ownership on Financial Decisions**

### EXTENDED ABSTRACT

Consumers experience varying degrees of ownership over the incurrence of an expense. For example, the decision to purchase a new iPhone to replace an old one with a shattered screen could be perceived as highly dictated by a consumer's own will (e.g., the phone seems functional but the consumer decides to incur the expense anyways), or as relatively low in decision ownership (e.g., the phone does not seem to be fully functioning and thus the situation mostly dictates the incurrence of the expense). While in either case the consumer makes the ultimate decision to incur the expense of a new iPhone, we posit that different levels of perceived ownership will affect the consumer's spending experience and the specific choice for the expense (e.g. whether they choose a pricier new model or a cheaper old model).

The act of choosing is closely linked to perceptions of personal causality (deCharms, 1968), and such causal attributions have been shown to affect emotional responses to an outcome (Botti et al., 2009). Although consumers prefer making choices for themselves (Langer 1975; Langer & Rodin 1976), when facing a set of unattractive options, choosing could lead to lower satisfaction (Botti & Iyengar, 2004). Similarly, in the domain of financial decisions, while choosing to incur an expense can be greatly enjoyable because of the hedonic or functional utility one receives from the purchase itself (Csikszentmihalyi, 2000), such decisions can also be perceived as aversive due to the pain of payment one experiences from spending money (Prelec & Loewenstein, 1998; Knutson et al., 2007). While previous research has focused on the consequences of having autonomy in making a choice among various options, we explore the impact of perceived expense ownership—the extent to which a choice agent feels that the incurrence of the expense is dictated mostly by their own will or the situation—on the spending experience and the ultimate spending decision.

Specifically, we hypothesize that when consumers decide to incur an expense, a lower perceived level of expense ownership makes the expense easier to justify in their minds, leading to less pain of payment. This lower pain of payment has important consequences on financial decisions, such as increasing consumers' willingness to select a more expensive option for fulfilling that expense.

## Understanding the Expense Prediction Bias

## EXTENDED ABSTRACT

We conducted four studies to capture the impact of expense ownership on financial decisions as well as its underlying processes. In Study 1, 150 participants read two versions of a scenario where their old TV was having mechanical issues and they had decided to purchase a new TV. In the high ownership scenario, their old TV was having mild issues; in the low ownership scenario, their old TV was having the same mild issues in addition to more severe issues. Significantly more participants anticipated feeling less pain of payment (85%) and a higher likelihood of choosing a more expensive new TV (83%) in the low ownership scenario. Additionally, given that they were to buy a new TV, significantly more participants would prefer to be in the low ownership scenario (65%) even though in this scenario their old TV would be less usable and have lower resale value.

In Study 2, iPhone owners were led to imagine incurring the expense of a new iPhone because the screen of their current phone was shattered; however, the old phone was either still highly functional (high expense ownership) or had lost major functionality (low expense ownership). Participants then chose a specific new iPhone to purchase (varying in price and model), rated their anticipated pain of payment, and judged how easy it was to justify purchasing a new phone. We found a significant two-step mediation from expense ownership → ease of justifying purchasing a new phone → pain of payment → phone choice (95% CI: [.13, 9.09]). When participants experienced lower ownership in incurring the expense (i.e., they felt that the expense was mostly dictated by the situation), it was easier to justify the expense and they anticipated less pain of payment. Consequently, they chose more expensive phone options for fulfilling the expense.

Study 3 used the same design as in Study 2, and we varied whether participants imagined themselves or a friend as the decision agent in the scenario. While we replicated the two-step mediation when the decision agent was the self (95% CI: [.65, 14.05]), the effect was not significant when the decision agent was a friend. The results suggest that low expense ownership is effective in alleviating pain of payment only when it is self-serving.

In Study 4, participants earned real money from an initial filler task that included a scale of financial responsibility and were then presented with the opportunity to either pay to rent a short film or perform a boring task at no cost. Participants who stated their preference for renting a short film were then led to believe that they had either chosen the short film task (high expense ownership) or were assigned to it randomly based on a number they selected earlier (low expense ownership). Participants then chose between three short films that varied in price (\$0.25-\$0.75) and quality. We found a significant interaction of ownership condition and financial responsibility on film choice ( $b = -1.27$ ,  $t = -2.96$ ,  $p = .003$ ), where participants who were low in financial responsibility (1 SD below the mean) chose a significantly more expensive movie when they were in the low ownership condition (vs. the high ownership condition),  $b = 1.45$ ,  $t = 2.44$ ,  $p = .015$ . Conversely, participants who were high in financial responsibility (1 SD above the mean) showed the opposite effect,  $b = -1.10$ ,  $t = -1.93$ ,  $p = .054$ . While financially irresponsible consumers took advantage of low expense ownership to alleviate the pain of payment in order to spend more, financially responsible consumers seemed to have experienced reactance and spent less. Additional work to further explore the moderating role of financial responsibility is currently underway.

Previous research on expense misprediction has shown that people predict lower expenses for the future than they recall for the past (e.g., Peetz & Buehler 2009, 2013), a phenomenon we've labeled *expense prediction bias* (EPB). Gaining a deeper understanding of this bias is important because of the high frequency with which people make spending predictions (Peetz et al., 2016), and because expense misprediction may have serious real world financial consequences, especially for low-income consumers. With these considerations serving as motivation, the present research makes several notable contributions. First, we hypothesize that EPB occurs because people tend to think of their past expenses as somewhat unusual, and yet predict that future expenses will be more ordinary. In support of this theory we find evidence that *perceived unusualness* of future expenses acts as a moderator capable of reversing the bias. Furthermore, we provide novel evidence that EPB is associated with serious financial consequences, highlighting the importance of identifying an effective intervention. We also provide evidence that: (A) there is no corresponding income bias, (B) EPB gets stronger (rather than weaker) with careful prompting and thought by participants, (C) EPB is associated with underestimating the *number* of unique future expenses but not the *amount* of each one, and (D) EPB is *not* associated with numeracy, consideration of future consequences, propensity to plan, risk preferences, temporal discounting choices, income, or education. (These null results are not discussed in detail below due to space constraints). Finally, we augment research in this area—generally conducted with small samples of undergraduates—by replicating the bias across 5 studies conducted with 2,762 adult Americans from diverse economic backgrounds.

In Study 1, participants recalled and predicted the dollar amount of their required, optional, and unexpected expenses for the past and next week in counterbalanced order (no order effect was observed), and we calculated an EPB score by subtracting aggregate predicted from aggregate recalled expenses. Consistent with prior research on expense misprediction, participants under-predicted future expenses relative to past expenses, leading to a mean EPB score of \$63.58 (different from 0,  $p = .03$ ), or 13.0% of recalled expenses. In Study 1 participants were also asked to recall and predict their income. Consistent with prior research on expense vs. income-neglect (Berman et al., 2015), a corresponding income prediction bias was not observed. This null result was replicated in Studies 2-4 and is not discussed further.

Study 2 extended the EPB measure utilized in Study 1 by employing a time 1/time 2 design. This allowed us to examine a conceptually similar pattern, but calculate an alternative bias measure by subtracting time 1 predicted expenses from time 2 recalled expenses. The mean EPB score was \$60.61 (different from 0,  $p = .05$ ), replicating the bias in a time 1/time 2 design.

In Study 3 participants were asked to recall and predict regular and irregular expenses. They were subsequently provided with a list of common expenses to consider (e.g., rent, car repairs, home improvements), and given the option to revise their initial estimates. Initially, participants recalled \$480 worth of expenses, and predicted \$381 (Mean difference=\$99,  $p < .001$ ). After completing the detailed expense prompts, participants recalled \$584 worth of expenses, and predicted \$419 (Mean difference=\$165,  $p < .01$ ). Thus, the detailed expense prompts actually led to *higher* EPB scores, because participants revised their recalled expenses upward to a significantly greater extent than their predicted expenses ( $p = .01$ ). Study 3 also asked participants to report their experience with payday loans, allowing

us to compare EPB between payday loan users and non-users. The mean difference in initial EPB between payday loan users and non-users was \$74 ( $p=.07$ ), and this difference grew to \$233 ( $p=.01$ ) after participants were given the opportunity to revise their estimates. This result provides suggestive evidence of a link between EPB and high interest debt burdens.

Study 4 replicated the bias once again and also included an expense listing task that asked participants to estimate the dollar amount of unique expenses that they had during the last week and believed they would not have during the next week, as well as for unique expenses that they anticipated having next week but did not have during the last week. These measures showed that participants underestimated the *number* but not the *amount* of unique future expenses vs. unique past expenses (Mean difference for number=0.66,  $p<.001$ ; Mean difference for amount=\$19.48,  $p=.34$ ), and that underestimating the number of unique future expenses is correlated with EPB ( $r=.15$ ,  $p<.01$ ).

Study 5 sought to reverse the bias. Building off of our results from Study 4, as well as work by Sussman & Alter (2012) showing that individuals underpredict total exceptional (but not ordinary) expenses, we manipulated *perceived unusualness* of future expenses by randomly assigning participants to either a control condition that asked participants to recall and predict their expenses, a “different” condition that asked participants to list three reasons why their expenses for the next week might be different from any other week (before they predicted their expenses for next week), or a “similar” condition that mirrored the design of the different condition. As predicted, the bias was replicated in the control condition ( $M=\$37.31$ ), reversed in the different condition ( $M=-\$75.33$ ), and not meaningfully affected in the similar condition ( $M=\$20.41$ ),  $F(2, 446)=14.01$ ,  $p<.001$ .

The present research makes several important contributions to the literature on expense misprediction. Most notably we show that EPB is prevalent in large samples of adult Americans, that EPB is associated with payday loan use, and that EPB can be reversed by manipulating perceived unusualness of future expenses. In sum, these results advanced our theoretical understanding of EPB by integrating cognitive accounts of expense misprediction, and they have the potential to meaningfully impact policy that can tangibly improve consumer financial well-being. The present research also suggests several exciting directions for future research. Examples include investigating whether or not underestimating the number of unique future expenses (vs. the amount of each expense) mediates the bias, and establishing a causal link between EPB and downstream consequences such as payday loan use.

### Discretionary Debt Decisions: Consumer Willingness to Borrow for Experiences and Material Goods

#### EXTENDED ABSTRACT

Previous research suggests that people prefer borrowing for longer-lasting purchases because they continue receiving benefits from the purchase while they pay for it (e.g., Hirst et. al 1994). One fundamental categorization of purchases that is inherently tied to longevity is that of experiences and material goods (Van Boven and Gilovich 2003). Since experiences are ephemeral, the previous research suggests that people should prefer borrowing for material goods (vs. experiences). In contrast, the current work argues that, on average, people are more willing to borrow for experiences despite their greater ephemerality.

People typically consider borrowing when current funds cannot be used. Given the implicit tradeoff between borrowing and fore-

going a purchase in the present, we suggest that the importance of purchase timing is a stronger driver of willingness to borrow (WTB) than physical longevity. Further, we propose that purchase timing importance is generally greater for experiences than for material goods. In contrast to material goods which are typically used repeatedly over time, experiences exist for a finite time period. As such, experiences may be more likely to be conceptualized as a function of the time-specific properties when the experience is expected to occur. Thus, delaying an experience may seem like a more fundamental change to the purchase. Consequently, we suggest that WTB is greater for experiences (vs. material goods). An analysis of archival data and seven lab studies provide support for our hypotheses.

Using archival expenditure data from The Bureau of Labor Statistics, we calculated relative spending on discretionary experiences as a function of total spending (Tully et al. 2015). As predicted, greater spending on discretionary experiences predicted higher credit card balances ( $\beta=0.03$ ,  $t(30240)=5.35$ ,  $p<.001$ ), as well as more financing interest paid in the last month ( $\beta=0.03$ ,  $t(30240)=4.68$ ,  $p<.001$ ).

Study 1 demonstrated the basic effect in a lab setting. Participants considered either a material good or an experience they intended to purchase and indicated their WTB for the purchase. WTB was significantly greater for experiences,  $F(1, 335)=5.80$ ,  $p=.017$ , and was mediated by differences in purchase timing importance (95% CI: .17, .63).

Study 2 orthogonally manipulated purchase type and physical longevity to rule out the possibility that short-lived purchases incite a sense of urgency. Participants imagined visiting a local art store that was offering either art classes or a high-end painting kit and were further told that the purchase was expected to last them either 4 weeks or 12 weeks. WTB was greater for the experience,  $F(1, 297)=6.33$ ,  $p=.012$ , and was unaffected by physical longevity,  $F<1$ .

Studies 3 and 4 provide greater evidence of mechanism by examining boundary conditions. In Study 3, participants imagined being on vacation and wanting to buy either an experience (a city tour) or a material good (a painting from a local artist). However, we varied the purchase timing importance of the material good by varying whether the good was available for purchase online after the vacation was over. As predicted, WTB was greater for the experience when the material good was available online,  $F(1, 208)=17.24$ ,  $p<.001$ . However, there was no difference in WTB for the experience and the material good that was only available during the vacation,  $F(1, 208)<1$ , NS.

Study 4 examined attenuation by reductions in purchase timing importance for experiences. To do so, we examined the strength of the link between an experience and a specific period of time. In Study 4a, participants wrote about either an experience or material good they intended to purchase and indicated whether they had chosen a date (to have the experience or acquire the material good). When a date had been chosen (and the experience could be conceptualized as a function of time-specific features), purchase timing importance was greater for experiences,  $F(1, 135)=21.36$ ,  $p<.001$ . However, without having chosen a date, purchase timing importance was no different for experiences and material goods,  $F<1$ . Building from this, Study 4B asked participants to consider buying an experience (day at local theme park) or a material good (smartwatch). They were either told that a date had been planned or that they were considering one date in addition to others. WTB was greater for the experience when the date was set,  $F(1, 329)=10.47$ ,  $p<.001$ , but otherwise did not differ,  $F<1$ .

To reconcile our results with previous research, Study 5a varied whether the context was an acquisition decision (whether to borrow or to forego the purchase in the present) or a source-of-funding

decision (whether to use cash or borrowed funds to make the purchase). Since timing is unaffected in source-of-funding decisions, we expected that in these contexts, people would prefer to borrow for longer-lasting purchases in line with previous research. Thus, some participants imagined one purchase (either a stereo or music festival tickets) that would need to be financed, whereas other people imagined making both purchases, where *one* would need to be financed and the other could be acquired with cash. As expected, WTB was greater for experiences when the decision was framed as an acquisition decision,  $F(1, 503)=7.35, p=.007$ . However, WTB was greater for the material good when framed as a source-of-funding decision,  $t(244)=12.07, p<.001$ .

We have suggested that the reversal found in Study 5a was due to the relevance of purchase timing importance. However, two alternative possibilities are that when material goods and experiences can be directly compared (1) physical longevity becomes more evaluable (e.g., Hsee 1996) or (2) people feel like they *ought* to borrow for the material good (Bazerman et al. 1998). To isolate our proposed explanation, Study 5b was identical to Study 5a but for the addition of two new conditions in which we provided participants with a reference purchase to contrast the focal purchase against. Again, WTB was greater for the material good when framed as a source-of-funding decision,  $t(238)=10.60, p<.001$ . However, regardless of whether a reference purchase was provided, WTB was greater for the experience when framed as an acquisition decision (no reference:  $F(1, 975)=3.26, p=.071$ ; with reference:  $F(1, 975)=15.85, p<.001$ ).

## Do People Understand the Benefit of Diversification?

### EXTENDED ABSTRACT

Diversification—investing in many imperfectly correlated assets—reduces exposure to risk without sacrificing expected returns. Some assets in a diversified portfolio will perform better than expected and others will perform worse, but the value of the portfolio will be less volatile as these unpredictable deviations will tend to offset. Despite this benefit, many people are undiversified (Campbell, 2006; Goetzmann & Kumar, 2008). For example, a typical individual investor holds a portfolio with only four stocks (Barber & Odean, 2001).

While several explanations have been proposed to account for improper diversification, we explore a more fundamental question: Do investors understand the benefit provided by diversification?

Understanding how diversification affects portfolio performance requires understanding the distributional properties of a sum of random variables. This may be easy for statisticians, but most people have poor statistical intuitions (Lipkus, Samsa, & Rimer, 2001). Moreover, people may lack the financial literacy required to apply this knowledge correctly (Lusardi & Mitchell, 2007).

We demonstrate two pervasive errors in people's beliefs about diversification. First, many people believe that diversification increases, rather than decreases, the volatility of a portfolio. This error is particularly common among people low in financial literacy, and appears to result from a judgment of representativeness: Because diversification involves investing in many unpredictable assets (vs. only a few), it feels like it should increase the aggregate unpredictability of the portfolio. This is analogous to conflating the properties of an outcome distribution with the properties of the generating mechanism (Kahneman & Tversky, 1972, 1973).

Second, many people incorrectly believe that diversification increases the mean performance of a portfolio. This error is most common among those high in financial literacy and seems to result from a misunderstanding of financial advice: People may know that

diversification is a good investment strategy but associate this with an increase in the mean, rather than a decrease in volatility. This is consistent with previous work suggesting the central tendency of a distribution is more salient than the degree of dispersion (Obrecht, Chapman, & Gelman, 2007).

In Studies 1A–1F, we had people make forecasts for diversified and undiversified portfolios using a graphical, histogram building tool (Goldstein & Rothschild, 2014). In effect, this tool yields a subjective probability distribution of each participant's beliefs about the future value of each stock portfolio. We found that many people, but especially those low in financial literacy, expected greater variance in possible stock prices (i.e., more risk/volatility) from the diversified portfolio. Further, most people, but especially those high in financial literacy, expected a greater mean stock price (i.e., better returns) from the diversified portfolio. These biases are inconsistent with inferences about portfolio construction, as they occurred even when stocks in the portfolios were “randomly selected” or explicitly known.

In Studies 2A and 2B we explored possible downstream consequences of these biases using a portfolio construction task. We found people tended to create portfolios that mismatched the risk preferences of investors in ways consistent with the false beliefs documented in Studies 1A–1F. Specifically, those low in financial literacy tended to give a less diversified portfolio to an older, risk-averse investor than they gave to a younger, risk-seeking investor.

Finally, in Study 3 we explored possible explanations for these biases by manipulating what people thought about before forecasting the performance of a portfolio. Participants who first thought about how the individual stocks in the portfolio might perform expected greater unpredictability from the portfolio, while those who instead thought about the value of diversification expected greater returns from the portfolio.

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